Canada
Department of Mines and Resources
LANDS, PARKS AND FORESTS BRANCH
DOMINION FOREST SERVICE

THE FORESTRY PHASE

MEMORANDUM FOR THE SUB-COMMITTEE ON THE CONSERVATION AND DEVELOPMENT OF NATURAL RESOURCES

BY

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OTTAWA, MARCH 6, 1942

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Subcommittee on the Conservation and Development of Natural Resources

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Over 58 per cent of the land area of the nine provinces is occupied by forests, of which some 37 per cent is classified as productive forest. These forests grow on lands that are, for the greater part, of no agricultural value. Recognition of this physical fact must underlie a sound approach to the establishment of a stable Canadian economy. Only to the extent that there is adequate development of the producing capacity and tourist values of these forest lands can we hope to realize the total possibilities of this country. Forests must always be looked to to provide a means of livelihood for a large part of the Canadian population.

It has been indicated that the underlying objective in all reconstruction planning should be the provision of employment. In a memorandum entitled "Forestry and Reconstruction," submitted in September, 1940, the undersigned stressed the fact that, in so far as forestry activities are concerned, the only security in employment under normal conditions of life would lie in employment in the forest industries. Assuming that this statement be accepted as true, it follows that reconstruction measures must include steps to ensure

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the stability and prosperity of the forest industries. These being essentially export industries, it follows that the development and retention of post-war world markets must be given adequate attention. This indeed is a matter of importance not only from the standpoint of the provision of post-war employment but of the essential economic prosperity of the country. In 1941, for instance, the favourable balances from trade in wood, wood products, and paper totalled over $350,000,000, converting an otherwise unfavourable balance of commodity trade of over $159,000,000 to a favourable balance of around $191,000,000.

The total stand of accessible saw timber in Canada may be estimated as around 250 billion feet board measure. The cut during 1941, which approached an all-time high, was five billion feet. There are around 1½ billion cords of smaller material, of which approximately 900 million is of softwood species. Supplies of spruce and balsam in eastern Canada alone are over 600 million cords. The total cut of pulpwood for 1941 was probably over 9 million cords.

Total annual depletion of the forest from all causes (including use by industry and losses through fire, insects, disease, and other causes) averages about 14 cubic feet per acre on the productive forest area. Of this 70 per cent was used and 30 per cent wastage. It is probable that this depletion is just about being balanced by annual growth. It is known that the annual growth could be greatly increased by the application

of simple cultural treatment of the younger stands and by the exercise of greater care in the cutting of mature timber to provide more favourable conditions for regrowth.

In Canada the forest estate can be made to sustain forest industries expanded to a much greater degree than any present expectation of future markets would indicate to be necessary. Its tourist and recreational facilities are susceptible of much greater development. Game management undertaken along modern scientific lines can provide a source of much revenue. There has been little planning in the use of the forest even for industrial purposes. Ruthless exploitation has devastated large areas and, as a result, there has been migration of industry. The rise of the pulp and paper industry within the present century has brought significant changes. The large capital investments required have demanded attention to the adequacy of raw material supplies in areas contiguous to plant installations. There has been regulation of the cut on an area basis and, in the generality, the pulp and paper industry is today in a secure position as regards its pulpwood supplies.

With certain notable exceptions the trend in the lumber industry has been to smaller and smaller units of production, and this has been accompanied by an increasing preponderance of lower grades of lumber in the output of the industry. The life of the average sawmill is of the order of 15 years, and during that term a carefully managed operation should return the capital investment with a reasonable profit. This "short life" operation is the economic reason why the lumberman

on the whole is not interested in cropping his timber holdings.

The lumberman departs for new locations but the idle lands remain. The little sawmill community wanes and the local market for rural farm products disappears. Stabilization of forest industries is highly desirable from the standpoint of conserving social values. Over 90 per cent of the forest lands in Canada are vested in the Crown, the operators holding only rights to cut timber. It must rest with the governmental authorities, as trustees for the people, to prescribe and enforce cutting methods that will ensure successive timber crops and adequately safeguard all other forest values. By and large this responsibility has not been assumed in Canada to date. One of the most important phases of reconstruction in the forestry field should be in the remedying of this neglect.

From the standpoint of industry the essence of stabilization is continuity of raw material supplies. This means the availability of an area of forest adequate to provide volume requirements on a sustained yield basis. This may be accomplished in two ways:-

(1) Industry may be granted, under secure conditions of tenure, rights to the forest area required, subject to the proviso that the forests be managed under an approved plan. Here it will be to the enlightened self-interest of the operator to work his forest property carefully in accordance with the plan.

(2) The governmental authority itself may retain control but organize timber disposal to provide a continuous supply for each industry, parcelling out requirements under a short-term timber sale policy. Here again there must be insistence on cutting operations being conducted under forestry principles. But in this case, as the operator himself has no continuing interest in any particular area, there must be adequate governmental inspection to ensure that operations are being satisfactorily conducted. Without this, destructive exploitation, with no thought for future crops, will naturally follow.

Aside from man's ill-treatment, the great enemy of the forest in Canada is fire. The decade ending in 1940 saw a retrogression in fire control, and the exceptionally serious fire year of 1941 amply demonstrated the weaknesses that had developed. From the standpoint of neither the public, as the owner, nor the industry, as operator, is it of much avail to plan constructive methods of tending and harvesting forest crops until the danger of destruction of the capital asset from fire is materially lessened.

In the light of the above brief review of the Canadian forestry situation, an attempt will now be made to assess the part that forestry can play in post-war reconstruction, with particular emphasis on employment. The first essential seems to be a proper integration of the forestry phase in the complete picture of the proper development of the natural resources of the country.

In other words, plans in the field of forestry should be considered in the light of their interaction with projects necessary for the development of agriculture, mining, fisheries, waterpower, and tourism.

Plans for the national development must be the sum of plans developed for the physiographic units into which the country is naturally divided. Many of these units will be intraprovincial but many will embrace areas lying in more than one province. The closest possible collaboration and co-operation between provinces will be necessary if a natural scheme of reasonable development is to be successfully achieved.

The broader question of integration of plans for the development of all resources is beyond the scope of this memorandum, other than to indicate in general terms the necessity therefor. The balance of this discussion will be confined to the forestry field as such.

In the memorandum entitled "Forestry and Reconstruction," above referred to, reference was made to the necessity for a national forest policy and the steps, preliminary and otherwise, required to give effect to it. In the opinion of the undersigned, these are the projects which should be considered in the light of post-war reconstruction activities. A summary discussion of them follows.

1. Forest Inventories

Existing estimates have been prepared by the Dominion Forest Service on the basis of information received from the provinces, supplemented by other data obtained as a result of the investigations and researches

of the Service itself. They are admittedly fragmentary and unreliable but consitute the best summary available at the present time.

In a country the size of Canada it would be obviously impossible to obtain anything like an accurate statement of the forest resources without an enormous expenditure of time, funds, and energy It is, however, within the field of economic possibility to obtain a working knowledge of the more important areas through the use of aerial photography A technique has been developed that will give a reliable picture of the areal distribution of forest types and stands, much more accurate in fact than can be determined by the ordinary methods of ground cruising. In addition it has been found possible to produce volumetric estimates of stand contents with an error percentage small enough to permit of their use for inventory purposes. When added to this some ground checking is done to determine cull factors and other details, data adequate for operating purposes may be made available. Some 875,000 square miles of the Canadian forests have already been covered by air photographs. True some of these were taken some considerable time ago and should be replaced by more modern pictures. The Dominion Forest Service has made estimates covering some 17,000 square miles. Staff can be readily trained to expand facilities for securing of reliable information through the interpretation of aerial photographs. Here is a specialized field providing an opportunity for employment on work of the highest importance.

2. Land Classification

The basic resource of the country is the land. Sound development requires that all lands should be put to the highest use. The history of colonization in Canada in the past affords too many instances of settlements on lands naturally incapable of supporting successful agriculture. Not only has human life and energy been wasted, unnecessary suffering and poverty encountered, but large areas of valuable forest have been destroyed through attempts at settlement and the careless use of fire which has accompanied it. A proper segregation of agricultural and true forest soils is a necessary preliminary to planned development of the country. Once the classification has been made, the forest soils should be withdrawn from settlement and dedicated permanently for forest purposes. In classifying lands it must be remembered that in our northern forest country the provision of woods work properly organized on a continuing basis, as an activity complementary to farming will enable the establishment of communities on lands which, taken alone, would not produce returns sufficient to support a reasonable standard of living.

In the development of agricultural communities attention must be paid to the importance of retaining a sufficient portion of the farms as farm woodlots. The farm woodlot is an integral part of the nation's wood supply; indeed over one-third of the total cut of forest products today comes from that sources. The provision of educational facilities looking to the proper care and management of these woodlots is a matter of urgent public importance. Here are fields for specialized employment which, while comparatively small, will, in the aggregate, produce results that will exert an enormous influence on the future well-being of the country.

3. Protection of the Forests

Adequate protection of the forest from destruction through fire, insects, disease and other preventable causes is the first requisite. Until this is secured there can be little hope of erecting an enduring forest economy in this country. Herein lies the largest field of temporary forestry employment in the reconstruction period. It is a matter involving co-operation between the Dominion, provincial and municipal authorities and the forest industries themselves. While the provinces, as owners of the lands, should assume the primary responsibility for the institution of effective protective measures, the Dominion has also a positive interest because of the extent of the forests and the importance of the forest and tourist industries. It is up to the Dominion to give leadership and financial assistance in the prosecution of forest improvements and other measures essential to forest protection.

4. Forest Research

The proper use of forest lands implies the production of marketable timber crops best adapted to the specific site requirements, giving them cultural treatment during the growing period and harvesting them in such a way as to provide seed supply and seed bed conditions favourable to the starting of a new crop. We can learn much from the experiences in Europe and elsewhere but the variations in climate and particularly the wide variety of tree species occurring in the Canadian forest necessitate the development of a distinctly Canadian silvicultural technique.

After making full allowance for some excellent work done by provincial and university authorities, the fact remains that the prosecution of comprehensive studies in the research field has been left to a large extent to such action as the Dominion Government has been able to take. Work in this field is yet only in the rudimentary stage. Five forest experiment stations established by the Dominion Government provide opportunities for limited employment in the undertaking of experimental cutting operations covering areas large enough to indicate economic feasibility on a commercial scale. There is need for additional experimental stations, and the initial development of these would provide a further source of employment.

Because of the great extent of our forests and the wide variety of climates under which they grow, there is a great variation in growing conditions. Reliable estimates of growth are necessary in any management plan. Here is a wide field for further investigation with opportunity for specialized employment.

The field for forest research in Canada is very large and in time many organizations must participate in scientific investigations. There will be need for co-ordination of plans and methods so that the results obtained in one place may be available for comparative purposes in other parts of the country.

As regards forest products from present natural grown stands, much research and investigation is necessary to determine possible uses for existing timber species, many of which are not now marketable, and to indicate

how Canadian forest products can be substituted for imported material, wood and otherwise. Forest products research is a laboratory matter requiring highly trained technical workers and would afford little opportunity for employment.

5. Forest Management

The forest area of Canada is so large that it is neither necessary nor desirable to plan for forest management over the entire area. Management plans to be enduring must be restricted to localities where the extra costs involved will have offsetting compensations, as, for instance, decreased transportation charges. Under a sound plan of management each major unit of industry would have set aside for its use an area of woodlands sufficient to ensure a continuous raw material supply; or conversely, the number and size of mills would be limited by the productive capacity of the forest in any particular region.

Present industrial plants lie for the most part in the southerly, more-settled parts of the country. Comparatively near at hand are extensive areas of cut-over or burned-over land bearing reproduction or advanced growth. These are the areas from which the next crop of raw material should come. Comparatively simple cultural treatments would favour the more valuable species and increase production. Working plans for the management of timber holdings might well include treatment to stimulate the growth of young stands, such as thinnings. This class of work would provide forest employment in areas fairly contiguous to settlements.

Under present wartime conditions the machine-shop apprentice system is producing good results. There is reason to believe that a somewhat similar arrangement introducing unskilled labour in the woods operations would, if properly organized, be equally effective. Studies made by the Woodlands Section of the Canadian Pulp and Paper Association show that comparatively minor alterations in present cutting technique, particularly in the use and proper maintenance of well-chosen tools, can materially increase output per man-day. It should not be beyond the competence of unskilled labour, given good direction, to acquire an efficient technique. Such a scheme would involve assistance from the Dominion Government and particularly would require a wise choice of competent instructors on whom, in the final analysis, success of the undertaking would primarily depend.

With the introduction of the Diesel-engined tractor and the motor truck in the woods, there has been, within the last few years, a start towards mechanization of woods operations in Eastern Canada. The return from the war of large numbers of men thoroughly trained in the handling of all kinds of complicated motor vehicles should facilitate future development in the transportation phase of logging, and provide opportunity for employment.

No discussion of forest management would be complete without reference to the question of integration of forest industry. Under present conditions we have industries using only a portion of the raw materials available in the forests. For instance, pulpwood

operations take out only spruce and balsam, leaving other valuable kinds of trees in the forest. In northern Europe the practice is to take all material of merchantable size and process it in plants constructed to make full use of every kind of raw material derivable from the timber holdings. The present trend in Canada is toward this type of organization of industry and reconstruction plans should be directed to facilitate this end.

6. Reforestation

Serious misconceptions exist in the public mind as to the relative merits of tree planting and reliance on natural regeneration. To far too many people forestry and tree-planting are taken as synonymous terms. Canada is particularly fortunate in having climatic conditions unusually favourable for reproduction of forests by natural means. Of the productive forest area within provincial boundaries, over 250 million acres is covered with young growth which has sprung up naturally after logging or fires. These young stands will comprise the main source of raw material supplies for industry when the present merchantable timber is removed. Protection and cultural treatment of these young stands will yield much cheaper wood than can be obtained through dependence on artificial reforestation.

Sentiment is easily aroused as to the alleged necessity of embarking on large-scale, expensive tree planting as a cure-all for Canada's forestry ills. The fallacy of proposing a program of planting entailing expenditures of fifteen to twenty-five dollars per acre, while countenancing the destruction each year, through

preventable forest fires, of over 640,000 acres of young growth, and an additional area of nearly 400,000 acres of cut-over lands bearing residual stands of timber, needs wide public recognition.

Nevertheless in some sections artificial regeneration is necessary and desirable in the public interest. Putting forest soils located near mills to productive use, and reclamation of waste lands, present vital problems in specific cases. Artificial reforestation is justified as a special, but not as a general, policy. In the aggregate a considerable volume of work can be justified,providing opportunity for employment both in raising planting stock and replanting in the field.

7. Forest Education

The general public in Canada has not yet had an adequate appreciation of the part that the forests have played and must continue to play in the national economy. It is essential that sustained efforts should be made to make the people of Canada "forest conscious". Employment in forestry activities along the line suggested above would of itself draw public attention to the forestry situation. The work should be adequately publicized and its bearing on the development of a national forest policy clearly explained.

The greater use of wood can simplify our post-war problems. It will enable us to obtain a nearer approach to former living standards by stimulating employment in the use of products of our own soil, and thus obviating the necessity for costly importations.

The building of a better Canada after the war will take a long time. The builders will be in large measure the younger generation now in our schools. Educational efforts looking towards a greater appreciation of forest values must start in the schools. Only in this way can forestry become an integral part of the culture of our people.